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Review of Elementary/Secondary School Data

Needs of the National Center for Education Statistics

June 18, 1985

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ABSTRACT

The data collection program of the National Center for Education Statistics (NCES) should be designed for maximum reliability, validity, and manageability for all involved organizations. An adequate number of school districts should be sampled to produce useful data. Data should be more comparable between states if proper sampling techniques are employed. Some areas which merit data collection include directories of school districts (enrollment, number of schools by type or grade span, number of teachers, and expenditures per pupil); comparable counts of average daily attendance; class size; central office versus school-based administrators; full time equivalent teachers; teacher salaries; professional and other employees; high school seniors, graduates, and dropouts; and school revenues, expenditures, and projections. Measures of student outcomes would be more useful if they were based on the same achievement tests or if test results were equated through the techniques of Hammer's Anchor Test Study. (Comments are included on the NCES proposals on enrollment and accounting data and sample private school surveys, and on a paper by Cooke, Ginsburg, and Smith). (GDC)

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Introduction

This review of the elementary/secondary school data program of the National Center for Education Statistics (NCES) was approached by this author from a professional background which included positions as teacher, school administrator, educational statistics researcher, and manager of the statistical analysis and education statistics information branch of the National Center for Education Statistics (NCES). As I did then, I believe that NCES must serve the school administrators (State, intermediate, and local), the Department of Education, and the inquiring public, which includes the ordinary taxpayer, the news media, and the research community.

The collection, analysis, and dissemination of needed data must be done with an eye to keeping the task manageable in Washington, and the burden on respondents as small as possible while producing data which have reliability and validity. All these purposes can be served by increased dependence on sample surveys directed by knowledgeable professional educational statisticians and with increased cooperation of the State Departments of Education (SDOE) and the U.S. Department of Education. The problems of comparability of data between States and reliability of final products would be diminished by greater use of sampling.

For example, the quagmire of average salaries of teachers could be managed if an educational statistican, who understood State school finance, were in charge of a sample survey of about 5,000 local education agencies (LEA's). The sample size necessary may be more, or less, but it should be capable of producing a distribution of average salaries of teachers by size of district and by State. Where there are unusual arrangements, such as State payments directly into the teacher retirement funds, a small research project would be presented. However, if the researchers were working with a small number of survey forms, that problem could be solved by a system of attribution, which would make the figures comparable to the typical State figures.

Similar situations, such as State payments for construction of buildings and payments for debt service, could be managed by attribution techniques to make revenues and expenditures comparable to the large majority of independent LEA's.

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Data Items or Data Series Needed

The 1985 data collection program as presented to the reviewers is impressive on paper and most of the work seems desirable; however, there are items and series for which there may be little need. The items most needed are those that describe schools, school districts or other local education agencies, pupils (including information about completers, dropouts, and graduates), revenue or income, expenditures, and outcomes. Much of this information can be had from records in the State capitals.

Schools and School Districts. Universe maintenance as described in the 1985 NCES program should provide sufficient data on schools and school districts. While it is essential to have these universe lists and to keep them up-to-date, the data there must be readily available to Department employees and other researchers on a timely basis and provisions must be made to provide information on a purchased-service basis as needed by the public. The maintenance of these files would be further justified if directories were produced on some reasonable cycle. It has been about seventeen years since school directories were published by the Department and LEA directories cannot be counted on as being up-to-date. LEA directories should include some usable information such as enrollment; number of schools by type or grade span; number of teachers; and expenditures per pupil.

Enrollment and Attendance. As mentioned elsewhere, the current NCES data program presents some problems of terminology or nomenclature which should not be entirely overlooked. It is difficult to think of primary and pre-primary pupils as students, which is a term traditionally reserved for the college attendee. Likewise, fall membership leaves something to be desired when referring to enrollment on, or near, October 1. Membership has been a term denoting the average number of enrollees over some period of time, and it has been defined in the handbook series. At any rate, accurate enrollment by grade and level, collected annually (periodically by sex and age) is vital to the statistics program. Average daily membership (ADM), and average daily attendance (ADA), are measures of pupil load which are not now comparable State to State and not available in some areas. These are things the Administrator and the Chief State School Officers should attempt to define and make universal. Leadership is vital and, in some cases, State legislation would be desirable, e.g., ADA in California. It is amazing that California has not corrected this unusual situation of allowing pupils, with valid excuses, to be counted as present. Over the years, it has cost the State school system millions in federal aid money - Elementary and Secondary Education Act, Title I (later called Chapter I), and School Assistance in Federally Affected Areas (SAFA or Impact Aid). ADM and/or ADA are the only measures of pupil load which will make it possible for researchers and administrators to make the needed comparisons.

Class size is another statistic needed periodically to show the distribution of the pupil burden on the individual teacher. Pupil/teacher ratio is not a substitute for class size and the idea of making that substitution should be discouraged. A periodic survey involving a small sample would produce a distribution of class size by State, and need not be done more often than every three to five years. It has not been done adequately for many years.

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Several other sets of numbers should be made available on a regular basis through sample surveys or updates: length of the school term, compulsory attendance ages, pupils transported, and enrollments in various programs or subject areas.

It is possible that some of the items mentioned here could be obtained by the Bureau of the Census; for example, enrollment by grade, sex, and age.

Employees

Administrators. Professional administrators should be accounted for in at least two groups -- those in the central office, and those whose activities and locations are school-centered. Full time and full-time equivalent of part time would be needed, as well as the salary expense for the two basic groups. Adequate information should be available from a biennial sample survey which would produce a distribution. The periodicity could be longer if experience shows this population to be stabilized.

Teachers. The number should be collected by a sample survey which would produce a State-representative distribution by employment status -- full time, and full-time equivalent of part time. The associated salary expenditures should be collected biennially to produce good figures on average salaries of teachers. As mentioned elsewhere in this paper, attribution of some salary-related items will be required in a few States. Additional sample surveys at intervals of about four or five years should collect data on teachers by sex, by assignment and level, by training, and by years of teaching experience. It is conceivable that these data could be collected by some other agency such as the National Education Association, but they should be institutional data as are almost all those discussed in this review.

Other Professionals. Data are needed on other professional employees such as guidance workers, psychologists, and librarians at the same level of detail as for teachers.

Non-professional (Classroom associated). Data on the non-professional employee in the classroom should be approximately the same as for the teachers. Using a sample may be risky, so it may be imperative to include the necessary items in some universe survey, or a specially designed sample.

Non-professional (Non-classroom associated). Data are needed periodically on the number of full-time equivalent non-professional employees by general assignment (office-clerical, maintenance, cleaning, bus driver, etc.). Adequate data should be obtainable from a small sample after gross figures have once more been obtained.

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High School Seniors, Graduates, and Dropouts. Data on the study programs of high school seniors, at least in general terms, should be collected and analyzed on a periodic basis. The number of graduates and the general area of their studies should be made available by State, and by sex. General Educational Development (GED) certificate recipient data must be reported separately from those who receive regular diplomas.

Properly designed dropout studies should be done at regular (3 - 4 years) intervals through the use of a sample which will estimate a State distribution by size of school system. Reliance on the retention rates, presently the only substitution for dropout rates, indicates a reluctance to attempt a difficult task even when there is a clamor for better data than that produced by NCES.

Revenues and Expenditures

Revenues. Income or revenue by source (Federal, State, intermediate, local, and other) should be collected and reported by State. A distribution by size of school system would be a benefit, even if available only every four years. If State aggregate figures are not easy to obtain on an annual, routine basis, a sample study every other year should be adequate. There should be some exhibit items such as the proportion of local funds from property taxes. Dependent districts and those States where unusual financial arrangements prevail will require that some attribution be done by a knowledgeable educational statistician. For instance, if the State makes contributions directly to the teacher retirement system, those amounts must be attributed to the salary expense item, and to an appropriate revenue item.

Non-revenue receipts should be available by State. This is a necessary item, but in some cases so much attribution is required that the figures should be collected biennially or less frequently unless some of the problems can be solved. If non-revenue data are not obtained, the total picture will not be available.

Expenditures. The various financial accounting handbooks and their revisions have introduced some confusion into an area of school statistics where there was less than total agreement before; however, even the most recent revision allows the collection of needed data since there have been no major changes introduced by the 1980 revision. In a separate section of this review, there appears a set of comments on the NCES Common Core of Data (CCD) which impinges on the following list of items that should be available in all school systems using the new handbook. Some combining of items will be required to make comparisons with States where the new handbook is not being used.

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Current Expenditures
  Elementary/Secondary Instruction Programs

  Support Services, Instruction
    Attendance
    Guidance
    Health
    Psychological Services
    Speech Pathology
    Instructional Staff
    Other Instruction

  General Administration
    Business Services
    School Administration
    Operation and Maintenance of Plant
    Transportation

Facilities Acquisition
  Capital Outlay for Equipment, Buildings, and Sites
  Interest on Long-Term Debt Associated with Building
  Repayment of Principal of Long-Term Debt

Projections. Most of the items detailed here should be included in a complete set of projected statistics. The information people must have projected statistics -- some of their "customers" will not take "no" for an answer. Suppose the White House asked for an estimate of expenditures for public schools in 1988-89 and the answer, in due course, went back. Then the same questioner might say he wanted an estimate of elementary/secondary enrollment for the same year. These answers better "fit together" or there will be embarrassment enough for everyone. Without a coordinated set of projections, these questions will probably not be handled correctly.

The information staff can do a great job of estimating statistics for the current year and maybe the next year or two, but beyond that, too much demographic information is needed for them to have a good answer for 1995-96, for instance. Restarting the program would require some time and resources, but would be a worthwhile expenditure.

Outcomes

Outcomes. Measurement of outcomes is a morass which should be avoided; however, many inquirers want to know how a particular school, school district, or State school system ranks with others.

The Federal or State governments probably should not design a testing program to make these outcome comparisons. Those States with graduation test requirements typically agree that individual, school, or school district data will not be made

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public. How could a national achievement test be given? States have shown interest in expanding the sample for the National Assessment of Educational Progress (NAEP) to obtain State representative figures; however, these are not readily made available to the researchers or news media. They don't mean much unless State estimates are obtained for all States.

It may be feasible to equate existing test results through the techniques used in the Anchor Test Study, done several years ago by Dr. Charles Hammer (NCES), where results of eight reading achievement tests were equated so that one could find a comparable test score for any of the eight tests when compared to any other. This project was successful, but has not been widely used. In fact, it has been used hardly at all. Could the States agree on a set of achievement tests that would be administered by each state, or could all those that exist be equated; it is doubtful.

This is the kind of thing the Secretary could get his teeth into and it might even work for him, but it is recommended that the Center remain ready to help but not lead.

Comments

Questions and Comments about CCD. The word "membership" has always been connected with some sort of average, such as average daily membership. What then, is fall membership as in Part I, Public School Universe? Obviously, it is the number enrolled (on or near October 1). Why not ask the schools for the number of full-time classroom teachers, and the full-time equivalent of part-time classroom teachers? The response burden would not be increased because these numbers are typically known separately. The data tell us something about employment practices, particularly if compared over a period of time. All of the Part I data would be useful in a set of school directories which have not been published for about seventeen years. The data are available from computer files, but that is a poor substitute and is not widely known.

Are all the items needed for sampling available in Part II, LEA Universe, or a combination of Part II and Part III, LEA Non-fiscal Report? In Part III, LEA Non-fiscal Report, there are more problems with nomenclature: does instructional staff include guidance personnel, etc., as has been traditionally true? Student membership is used again when apparently enrollment is what will be given by the respondent. There may be a problem in Part III, LEA Non-fiscal Report unless the question about enrollment is asked more clearly than it is stated in the list provided. The attempt here seems to be to get at part-time attendance of children below the first grade. It's better to ask how many there are, and the length of their school day, then do your own arithmetic, than to wonder if it has been done, or done correctly. A regular program for publishing a directory of the Part II data every third year would be a good service. It would be a better service if a little more information could be added, such as fiscal status and current expenditures per pupil.

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Part IV, LEA Finance Report, is the worst example in CCD; it shows a lack of understanding of the problems and presents unworkable solutions. It is not necessary (or desirable) to obtain these items every year. A relatively small sample will produce a distribution suitable for most needs, most years, with a census tabulation periodically (three to five years). The construction of the data set seems to assume that the State and local education agencies are using the Financial Accounting for Local and State School Systems manual and that there are severe limitations on the data items available. First, relatively few State and local systems are using the manual. Second, there is no reason to omit the many functional accounts which have been used since 1957, except that the old Auxiliary Services, or Fixed Charges account no longer exists -- the amounts formerly collected there are now distributed to those accounts with which they are associated. Functional account data should be available since Mr. Barr says in the Financial Accounting foreword, "...it does not make major changes in the account classification system." The survey director will need to know (as will users) what is included in such classifications as Instruction, Attendance and Health, Operation and Maintenance of Plant. Putting these accounts together is not very new and causes researchers no serious problem.

Under other uses of public funds, more items are needed. For instance, it is not enough to ask for debt service, it is necessary to know interest on long-term debt and repayment of principal separately. If construction equals capital outlay, there is no problem; but does everyone understand this?

There seems to be enough similarity in the State aggregate and LEA items to make a charge of duplication, yet there are needed items in both. For example, State aggregate current expenditures for, or on behalf of, LEA's should be attributed to the proper program in the LEA, so that the resulting figures will be like those in other districts. Examples of these include State contributions to teacher retirement funds, State expenditures for buildings, and financing of debt. Comparable attributions to revenue accounts must also be made.

Comments on Sample Surveys. The sample surveys present a pretty picture, but so far the private school survey has not produced usable data. It appears to be too ambitious when the small proportion of children enrolled in private schools versus those in public schools is considered. To a person with little knowledge of sampling, the sampling fractions for public and private schools seem disproportionate. It is difficult to see what will be learned from the teacher demand and shortage survey unless there has been much work on definitions. For example: respondents should not consider a vacancy filled if a make-shift arrangement has put a poorly-qualified and poorly-motivated teacher in a classroom where a better trained individual is needed. Some of these surveys have produced valuable data, but an estimate of the distribution by State is needed in many instances.

Comments on paper by Cooke, Ginsburg, and Smith. The tone of "The Sorry State of Education Statistics" strongly implies that the ills of education statistics are the fault of things done by NCES along with some things not done. Unfortunately, there is some truth in what they say; however, many of the specifics are wide of the mark. Example: NCES does not have dropout statistics, but there is no suggestion that the retention statistics represent a substitute. Bureau of the Census data are presented in the Digest. Example: NCES has not reported on class

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size for many years; the data shown in the Digest are pupil-teacher ratios which are not claimed to substitute for class-size data. Example: Advocate groups such as those who favor bilingual education tend to overstate the size of their group which may well be enough to explain the differences that Cooke, Ginsburg & Smith complain about. Example: When one says that there is a 300 percent difference between 1.2 and 3.6, anything else said becomes suspect.

In Conclusion

This review does not present a detailed list of data items, nor does it recommend a data gathering plan, but it presents some ideas and recollections of problems and needs in providing information service over a number of years. Even to begin to do what has been suggested here, NCES would require support from Congress, from other users, and from the States. Additional and/or different staff would be required to do some of the work -- particularly the research and attribution suggested here.

Research on the measurement of outcomes should be increased; perhaps the higher education community could be helpful, or perhaps the Chief State School Officers or others may have expertise to lend to this huge, difficult, sensitive task.

It is difficult, if not impossible, to guess what the issues and data needs might be in 1999. If the trend toward greater interest in schools -- particularly by parents -- continues or increases, many factors discussed here could change drastically. Not the least of these would be interest in studies of class size and average salaries of teachers, as well as items which describe teacher fitness -- years of teaching experience, training, test scores, etc. Parents are not generally impressed by top-heavy administrative staffing, or inflating school bureaucracies, or the accompanying salaries. Even if parents don't become more interested in schools, the data discussed in this review will continue to be needed and should be provided by the only appropriate agency, the National Center for Education Statistics.

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